

## Supplementary Materials

# Metformin encapsulated porous particles with bio-microenvironment responsiveness for promoting tumor immunotherapy

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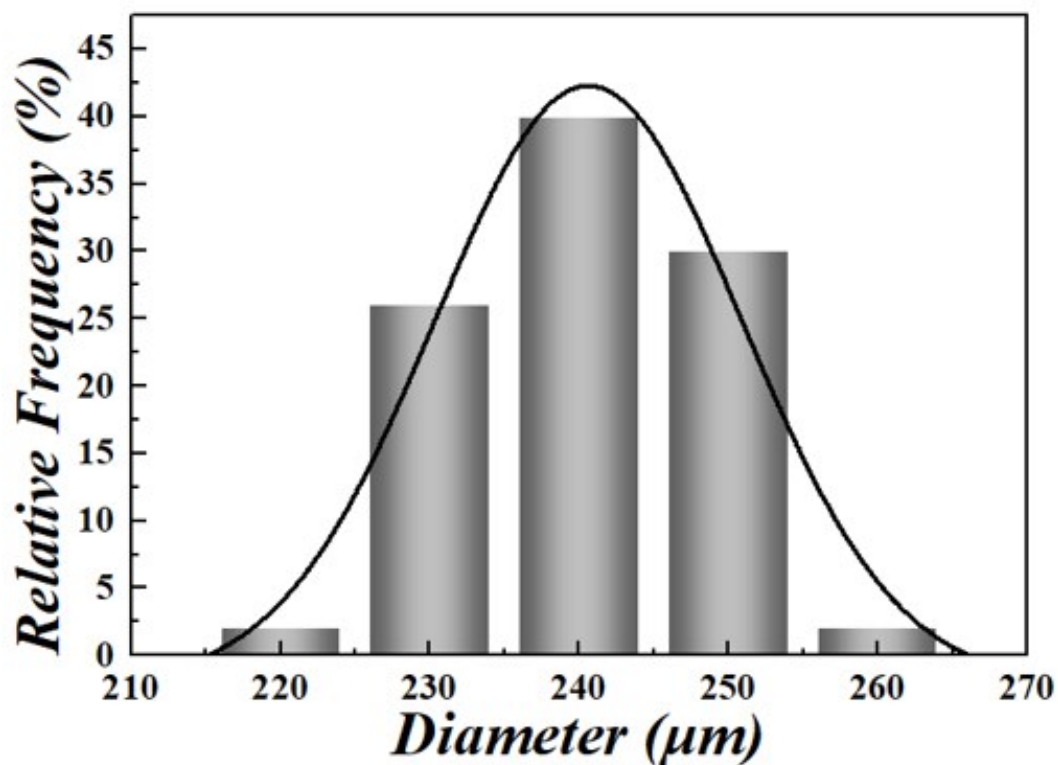
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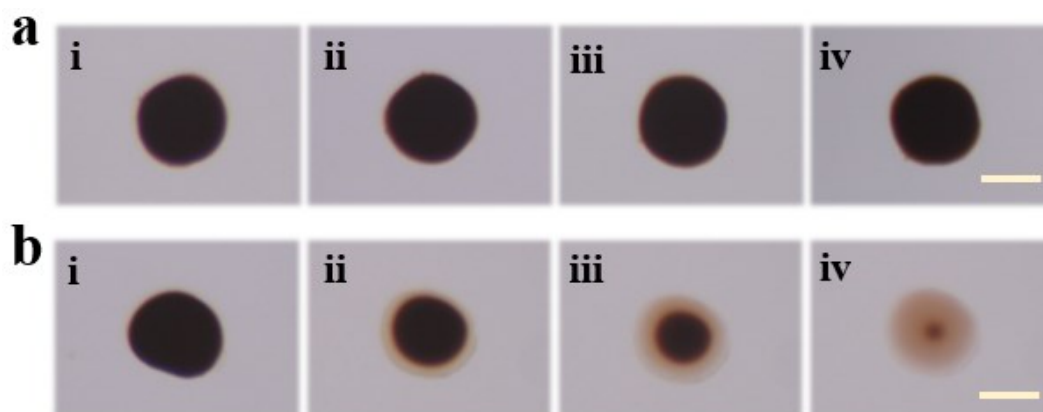
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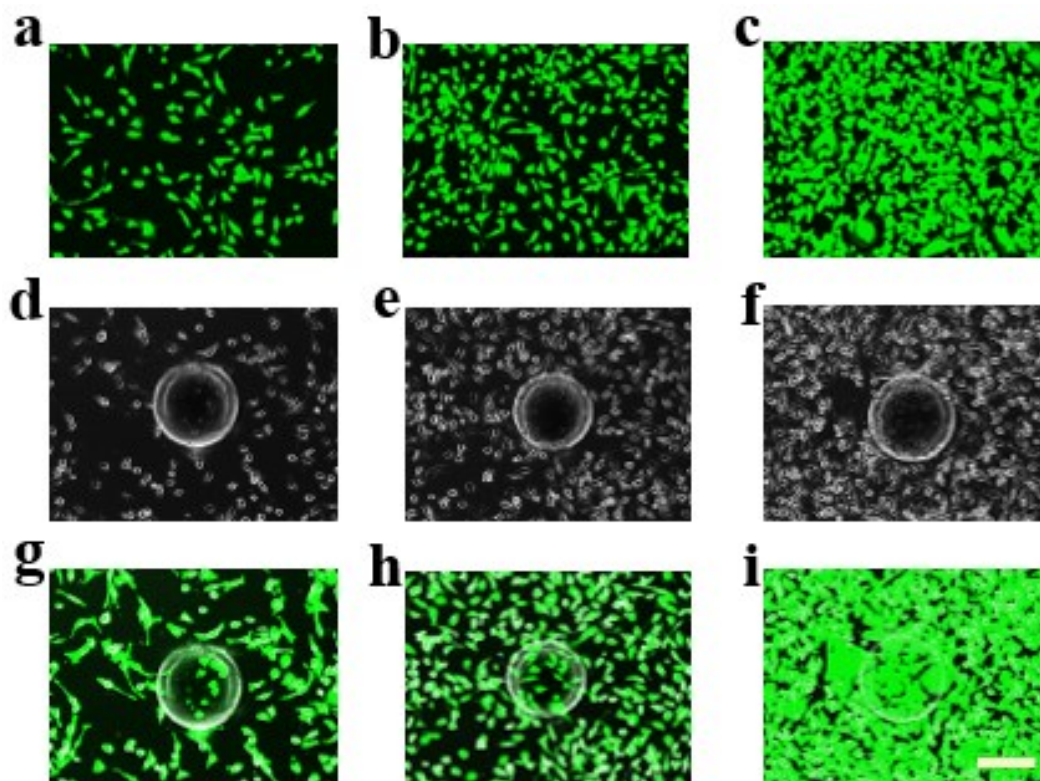
### Supporting Figures:



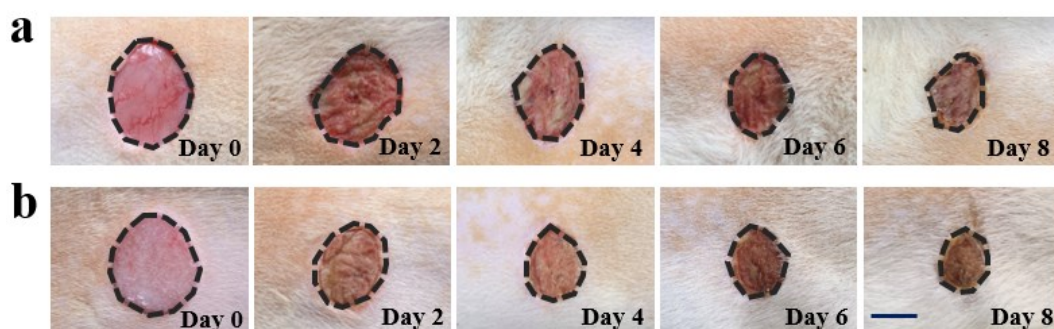
**Fig. S1** The statistical diameter distribution of silica colloidal crystal beads (SCCBs). The diameters of particles ranged from 220  $\mu\text{m}$  to 260  $\mu\text{m}$  and the average diameter was calculated to be 235.2  $\mu\text{m}$ .



**Fig. S2** (a) The CS@MnO<sub>2</sub> particles in PBS for 0 day ( i ), 1 day ( ii ), 2 days ( iii ), 3 days ( iv ). (b) The CS@MnO<sub>2</sub> particles in TME solution for 0 min ( i ), 5 min ( ii ), 10 min ( iii ), 15 min ( iv ). The scale bars are 200  $\mu\text{m}$ .



**Fig. S3** Images of MDA-MB-231 cells recorded by laser confocal microscopy. (a) The fluorescent images of MDA-MB-231 cells cultured for 1 day ( i ), 2 days ( ii ) and 3 days ( iii). (b) The optical images of MDA-MB-231 cells cultured with CS@MnO<sub>2</sub> particles for 1 day ( i ), 2 days ( ii ) and 3 days ( iii). (c) The fluorescent images of MDA-MB-231 cells cultured with CS@MnO<sub>2</sub> particles for 1 day ( i ), 2 days ( ii ) and 3 days ( iii). The scale bar is 200  $\mu$ m.



**Fig. S4** Images of wounds in control group treated with PBS (a) and in experimental group treated with CS particles (b). The scale bar is 5mm.

**Author contributions**

Y.J.Z. conceived the idea and designed the experiment; Y.Y.W. and C.W.C. conducted experiments and data analysis; Y.Y.W. and Y.X.L. wrote the manuscript; J.J.C., L.P.Z. and Y.X.Z. contributed to scientific discussion of the article.